

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	: Confirmation No. 5635
Amir Said	:
	:
Serial No. 09/912,278	: Examiner: Colin M. Larose
Filed: July 24, 2001	: Group Art Unit: 2623
	:

For: **IMAGE BLOCK CLASSIFICATION BASED ON ENTROPY OF DIFFERENCES**

Commissioner for Patents
P.O. Box 1450
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REPLY TO EXAMINERS ANSWER DATED NOV. 1, 2006

The Examiner's Answer offers a more detailed analysis of the '103 rejections, but still does not establish prima facie obviousness of the claims at issue.

The background of the specification identifies a need in the prior art for identifying edges in blocks of images (paragraphs 1-5). The claims at issue (claims 2-8, 12-16, 20-22 and 25-30) describe an approach for detecting an edge in a block of a digital image: determining entropy of a histogram of the block.

Manduca does not teach or suggest edge detection. Dhawan discloses an edge detection algorithm, but does not use entropy to detect edges. Instead, Dhawan uses contrast vectors (pixel differences) to check for zero crossings (see col. 10, lines 44-56). Based on this alone, prima facie obviousness of the claims at issue has not been established.

Both Manduca and Dhawan use entropy as a measure of the quality of the entire image (see column 5, lines 43-60 of Manduca and column 9, lines 35-42

and 60-62 of Dhawan). Neither document suggests that entropy can be used to determine whether a portion of an image contains an edge. This is especially true for Dhawan, which computes entropy, but does not use the entropy computation to detect edges. For this additional reason, prima facie obviousness of the claims at issue has not been established.

Manduca does not disclose the entropy measure that is recited in claims at issue. The claims at issue recite computing the entropy of a histogram, which indicates the frequency of pixel differences in a block. Manduca discloses taking entropy of pixel differences (gradients), not the histogram. Dhawan discloses taking the entropy of a contrast vector histogram, but over an entire image, not for a block of an image. Alone or in combination, these documents do not produce the features recited in the claims at issue. For this reason alone, prima facie obviousness of the claims at issue has not been established.

Images have edges. The question is whether a portion of an image contains an edge. The claims at issue address that question. Manduca does not.

The Examiner's Answer reveals legal errors in the rejections of the claims at issue.

a. Claim language is ignored. This is made clear in the Examiner's Answer. The examiner ignores the preambles of claims 2-8 and 12-16, as becomes clear when he assumes "arguendo" that the preamble language is necessary to give life, meaning and vitality to the claims. This is not an assumption for the sake of argument. It is a necessary consideration. And it is a consideration that is disregarded. The examiner gives no reason for ignoring the preamble, he only gives his belief that it should be ignored (Answer, page 8, section (10)).¹

In Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc), the Federal Circuit recognized that "claims 'must be read in view of the specification, of which they are a part.'" When the claims at issue are read against the backdrop of the specification, it is quite clear that the preamble gives meaning to the claim language: detecting edges in blocks of images.

The examiner's arguments about ignoring the preamble are not applicable to base claim 25 and its dependent claims 20-22 and 26-30, since these claims recite edge detection in the claim body. Moreover, the arguments about ignoring the claim preamble are not applicable to 6-8, and 15-16, which also recite edge detection in the claim body.

b. The examiner interprets the prior art. He expands the teachings of the cited documents in ways that are not supported by the cited documents, and then uses the expanded teachings to reject the claims.

The examiner is not supposed to interpret the prior art. He is supposed to interpret the claims against the backdrop of the specification, and then determine whether the claims read on the prior art.

The first argument in section 7 of the appeal brief provides an example of how Manduca is interpreted, and Page 9 of the Answer continues with that example. The examiner argues that Manduca's entropy measure can be used for edge detection (i.e., is operative for edge detection, could have been used for edge detection had Manduca recognized it). However, that is the examiner's contribution, after having read the applicant's specification. Manduca does not suggest using entropy for edge detection in portions (e.g., blocks) of an image. Dhawan does not either.

On the bottom of page 9 of the Answer, the examiner states "While [Manduca's] metric is operative to detect edges, its primary function is to ascertain the quality of detected edges." Manduca says no such thing. Column 5, lines 43-60 of Manduca et al. expressly states "a good metric for autocorrection must not only show appropriate a improvement as blurring and ghosting are reduced but, more importantly, must correlate well with an expert observer's opinion of image quality."

In the middle of page 9, the examiner attempts to describe how Manduca's entropy can be used to detect edges. Here too, Manduca does not support the examiner's attempt. Col. 5, lines 50-59 of Manduca simply states that the entropy is minimized in an image containing sharp edges, and that blurring or ghosting will increase the entropy of the edges. Manduca's entropy is a measurement of image

¹ "the Examiner believes that such a limitation does not render the claims patentably distinct from the cited prior art because it is fairly disclosed by Manduca."

quality, including whether edges in the entire image are crisp, blurred, etc.
Manduca does not expand his teachings about entropy to cover edge detection.

Respectfully submitted,

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